

**PART 70 MINOR SOURCE MODIFICATION  
OFFICE OF AIR QUALITY**

**and  
City of Gary Division of Air Pollution Control  
and  
IDEM Northwest Regional Office**

**U.S. Steel - Gary Works  
One North Broadway  
Gary, Indiana 46402-3199**

(herein known as the Permittee) is hereby authorized to construct and operate subject to the conditions contained herein, the emission units described in Section A (Source Summary) of this approval.

This approval is issued in accordance with 326 IAC 2 and 40 CFR Part 70 Appendix A and contains the conditions and provisions specified in 326 IAC 2-7 as required by 42 U.S.C. 7401, et. seq. (Clean Air Act as amended by the 1990 Clean Air Act Amendments), 40 CFR Part 70.6, IC 13-15 and IC 13-17.

Source Modification No.: 089-15121-00121	
Original signed by Paul Dubenetzky Issued by: Paul Dubenetzky, Branch Chief Office of Air Quality	Issuance Date: March 14, 2002

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## SECTION A

## SOURCE SUMMARY

This approval is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ) and Gary Division of Air Pollution Control. The information describing the emission units contained in conditions A.1 through A.2 is descriptive information and does not constitute enforceable conditions. However, the Permittee should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Permittee to obtain additional permits or seek modification of this approval pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

### A.1 General Information [326 IAC 2-7-4(c)] [326 IAC 2-7-5(15)]

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The Permittee owns and operates a steel mill.

Responsible Official:	Glenn Topping, Plant Manager
Source Address:	One North Broadway, Gary, Indiana 46402
Mailing Address:	One North Broadway, Gary, Indiana 46402
General Source Phone Number:	219-888-3387
SIC Code:	3312
County Location:	Lake
Source Location Status:	Nonattainment for Ozone, PM-10 and SO2 Attainment for all other criteria pollutants
Source Status:	Part 70 Permit Program Major Source, under PSD or Emission Offset Rules; 1 of 28 Source Categories

### A.2 Emission Units and Pollution Control Equipment Summary [326 IAC 2-7-4(c)(3)] [326 IAC 2-7-5(15)]

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This stationary source is approved for the upgrade of the existing pushing emissions control system which services Nos. 5 and 7 batteries as follows:

The replacement of the existing baghouse identified as CP3041, fan, dampers, motor and some of the associated duct work with a new baghouse identified as CP6050, new cross over duct work and modified machinery. This modification is expected to increase the exhaust gas flow rate from 134,800 acfm to 180,000 acfm which will improve the capture efficiency of fugitive pushing emissions at the moving capture hood.

### A.3 Part 70 Permit Applicability [326 IAC 2-7-2]

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This stationary source is required to have a Part 70 permit by 326 IAC 2-7-2 (Applicability) because:

- (a) It is a major source, as defined in 326 IAC 2-7-1(22);
- (b) It is a source in a source category designated by the United States Environmental Protection Agency (U.S. EPA) under 40 CFR 70.3 (Part 70 - Applicability).

## **SECTION B                      GENERAL CONSTRUCTION CONDITIONS**

### **B.1       Definitions [326 IAC 2-7-1]**

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Terms in this permit shall have the definition assigned to such terms in the referenced regulation. In the absence of definitions in the referenced regulation, the applicable definitions found in the statutes or regulations (IC 13-11, 326 IAC 1-2 and 326 IAC 2-7) shall prevail.

### **B.2       Effective Date of the Permit [IC13-15-5-3]**

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Pursuant to IC 13-15-5-3, this approval becomes effective upon its issuance.

### **B.3       Revocation of Permits [326 IAC 2-1.1-9(5)][326 IAC 2-7-10.5(i)]**

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Pursuant to 326 IAC 2-1.1-9(5)(Revocation of Permits), the Commissioner may revoke this approval if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.

## SECTION C GENERAL OPERATION CONDITIONS

### C.1 Certification [326 IAC 2-7-4(f)][326 IAC 2-7-6(1)][326 IAC 2-7-5(3)(C)]

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- (a) Where specifically designated by this permit or required by an applicable requirement, any application form, report, or compliance certification submitted shall contain certification by a responsible official of truth, accuracy, and completeness. This certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.
- (b) One (1) certification shall be included, using the attached Certification Form, with each submittal requiring certification.
- (c) A responsible official is defined at 326 IAC 2-7-1(34).

### C.2 Preventive Maintenance Plan [326 IAC 2-7-5(1),(3) and (13)] [326 IAC 2-7-6(1) and (6)] [326 IAC 1-6-3]

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- (a) If required by specific condition(s) in Section D of this permit, the Permittee shall prepare and maintain Preventive Maintenance Plans (PMPs) when operation begins, including the following information on each facility:
  - (1) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices;
  - (2) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions; and
  - (3) Identification and quantification of the replacement parts that will be maintained in inventory for quick replacement.

If, due to circumstances beyond the Permittee's control, the PMPs cannot be prepared and maintained within the above time frame, the Permittee may extend the date an additional ninety (90) days provided the Permittee notifies:

Indiana Department of Environmental Management  
Compliance Branch, Office of Air Quality  
100 North Senate Avenue, P. O. Box 6015  
Indianapolis, Indiana 46206-6015

and

Gary Division of Air Pollution Control  
504 North Broadway, Suite 1012  
Gary, Indiana 46402

The PMP and the PMP extension notification do not require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

- (b) The Permittee shall implement the PMPs as necessary to ensure that failure to implement a PMP does not cause or contribute to a violation of any limitation on emissions or potential to emit.
- (c) A copy of the PMPs shall be submitted to IDEM, OAQ, and Gary Division of Air Pollution Control upon request and within a reasonable time, and shall be subject to review and approval by IDEM, OAQ, and Gary Division of Air Pollution Control. IDEM, OAQ, and Gary Division of Air Pollution Control may require the Permittee to revise its PMPs whenever lack of proper maintenance causes or contributes to any violation. The PMP does not require the certification by the "responsible official" as defined by 326 IAC 2-7-

1(34).

- (d) Records of preventive maintenance shall be retained for a period of at least five (5) years. These records shall be kept at the source location for a minimum of three (3) years. The records may be stored elsewhere for the remaining two (2) years as long as they are available upon request. If the Commissioner or Gary Division of Air Pollution Control makes a request for records to the Permittee, the Permittee shall furnish the records to the Commissioner or Gary Division of Air Pollution Control within a reasonable time.

C.3 Permit Amendment or Modification [326 IAC 2-7-11] [326 IAC 2-7-12]

- (a) Permit amendments and modifications are governed by the requirements of 326 IAC 2-7-11 or 326 IAC 2-7-12 whenever the Permittee seeks to amend or modify this permit.

- (b) Any application requesting an amendment or modification of this permit shall be submitted to:

Indiana Department of Environmental Management  
Permits Branch, Office of Air Quality  
100 North Senate Avenue, P.O. Box 6015  
Indianapolis, Indiana 46206-6015

and

Gary Division of Air Pollution Control  
504 North Broadway, Suite 1012  
Gary, Indiana 46402

Any such application shall be certified by the "responsible official" as defined by 326 IAC 2-7-1(34).

- (c) The Permittee may implement administrative amendment changes addressed in the request for an administrative amendment immediately upon submittal of the request. [326 IAC 2-7-11(c)(3)]

C.4 Opacity [326 IAC 5-1]

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:

- (a) Opacity shall not exceed an average of twenty percent (20%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

C.5 Fugitive Dust Emissions [326 IAC 6-1-11.1]

Pursuant to 326 IAC 6-1-11.1 (Lake County Fugitive Particulate Matter Control Requirements), the particulate matter emissions from source wide activities shall meet the following requirements:

- (a) The average instantaneous opacity of fugitive particulate emissions from a paved road shall not exceed ten percent (10%).

- (b) The average instantaneous opacity of fugitive particulate emissions from an unpaved road shall not exceed ten percent (10%).
- (c) The average instantaneous opacity of fugitive particulate emissions from batch transfer shall not exceed ten percent (10%).
- (d) The opacity of fugitive particulate emissions from continuous transfer of material onto and out of storage piles shall not exceed ten percent (10%) on a three (3) minute average.
- (e) The opacity of fugitive particulate emissions from storage piles shall not exceed ten percent (10%) on a six (6) minute average.
- (f) There shall be a zero (0) percent frequency of visible emission observations of a material during the inplant transportation of material by truck or rail at any time.
- (g) The opacity of fugitive particulate emissions from the inplant transportation of material by front end loaders and skip hoists shall not exceed ten percent (10%).
- (h) There shall be a zero (0) percent frequency of visible emission observations from a building enclosing all or part of the material processing equipment, except from a vent in the building.
- (i) The  $PM_{10}$  emissions from building vents shall not exceed twenty-two thousandths (0.022) grains per dry standard cubic foot and ten percent (10%) opacity.
- (j) The opacity of particulate emissions from dust handling equipment shall not exceed ten percent (10%).
- (k) Any facility or operation not specified in 326 IAC 6-1-11.1(d) shall meet a twenty percent (20%), three (3) minute average opacity standard.

The Permittee shall achieve these limits by controlling fugitive particulate matter emissions according to the Fugitive Dust Control Plan.

**C.6 Operation of Equipment [326 IAC 2-7-6(6)]**

Except as otherwise provided by statute or rule, or in this permit, all air pollution control equipment listed in this permit and used to comply with an applicable requirement shall be operated at all times that the emission units vented to the control equipment are in operation.

**C.7 Stack Height [326 IAC 1-7]**

The Permittee shall comply with the applicable provisions of 326 IAC 1-7 (Stack Height Provisions), for all exhaust stacks through which a potential (before controls) of twenty-five (25) tons per year or more of particulate matter or sulfur dioxide is emitted. The provisions of 326 IAC 1-7-2, 326 IAC 1-7-3(c) and (d), 326 IAC 1-7-4(d), (e), and (f), and 326 IAC 1-7-5(d) are not federally enforceable.

**Testing Requirements [326 IAC 2-7-6(1)]**

**C.8 Performance Testing [326 IAC 3-6][326 IAC 2-1.1-11]**

- (a) Compliance testing on new emission units shall be conducted within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up, if specified in Section D of this approval. All testing shall be performed according to the provisions of 326 IAC 3-6 (Source Sampling Procedures), except as provided elsewhere in this approval, utilizing any applicable procedures and analysis methods specified in 40 CFR 51, 40 CFR 60, 40 CFR 61, 40 CFR 63, 40 CFR 75, or other procedures approved

by IDEM, OAQ.

A test protocol, except as provided elsewhere in this approval, shall be submitted to:

Indiana Department of Environmental Management  
Compliance Data Section, Office of Air Quality  
100 North Senate Avenue, P. O. Box 6015  
Indianapolis, Indiana 46206-6015

and

Gary Division of Air Pollution Control  
504 North Broadway, Suite 1012  
Gary, Indiana 46402

no later than thirty-five (35) days prior to the intended test date. The protocol submitted by the Permittee does not require certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

- (b) The Permittee shall notify IDEM, OAM of the actual test date at least fourteen (14) days prior to the actual test date. The notification submitted by the Permittee does not require certification by the "responsible official" as defined by 326 IAC 2-7-1(34).
- (c) Pursuant to 326 IAC 3-6-4(b), all test reports must be received by IDEM, OAQ and Gary Division of Air Pollution Control within forty-five (45) days after the completion of the testing. An extension may be granted by IDEM, OAQ, and Gary Division of Air Pollution Control, if the source submits to IDEM, OAM, a reasonable written explanation within five (5) days prior to the end of the initial forty-five (45) day period.

#### **Compliance Requirements [326 IAC 2-1.1-11]**

##### **C.9 Compliance Requirements [326 IAC 2-1.1-11]**

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The commissioner may require stack testing, monitoring, or reporting at any time to assure compliance with all applicable requirements. Any monitoring or testing shall be performed in accordance with 326 IAC 3 or other methods approved by the commissioner or the U. S. EPA.

#### **Compliance Monitoring Requirements [326 IAC 2-7-5(1)] [326 IAC 2-7-6(1)]**

##### **C.10 Compliance Monitoring [326 IAC 2-7-5(3)] [326 IAC 2-7-6(1)]**

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If required by Section D, all monitoring and record keeping requirements shall be implemented when operation begins. The Permittee shall be responsible for installing any necessary equipment and initiating any required monitoring related to that equipment.

##### **C.11 Pressure Gauge and Other Instrument Specifications [326 IAC 2-1.1-11] [326 IAC 2-7-5(3)] [326 IAC 2-7-6(1)]**

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- (a) Whenever a condition in this permit requires the measurement of pressure drop across any part of the unit or its control device, the gauge employed shall have a scale such that the expected normal reading shall be no less than twenty percent (20%) of full scale and be accurate within plus or minus two percent ( $\pm 2\%$ ) of full scale reading.
  - (b) The Permittee may request the IDEM, OAQ approve the use of a pressure gauge or other instrument that does not meet the above specifications provided the Permittee can demonstrate an alternative pressure gauge or other instrument specification will adequately ensure compliance with permit conditions requiring the measurement of



pressure drop or other parameters.

**Corrective Actions and Response Steps [326 IAC 2-7-5] [326 IAC 2-7-6]**

**C.12 Compliance Response Plan - Failure to Take Response Steps [326 IAC 2-7-5] [326 IAC 2-7-6]**

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- (a) The Permittee is required to prepare a Compliance Response Plan (CRP) for each compliance monitoring condition of this permit. A CRP shall be submitted to IDEM, OAQ and the City of Gary, Division of Air Pollution Control upon request. The CRP shall be prepared upon the initial start-up of the new baghouse, cross over ductwork and modified machinery by the Permittee, supplemented from time to time by the Permittee, maintained on site, and comprised of:
  - (1) Reasonable response steps that may be implemented in the event that a response step is needed pursuant to the requirements of Section D of this permit; and an expected time frame for taking reasonable response steps.
  - (2) If, at any time, the Permittee takes reasonable response steps that are not set forth in the Permittee's current Compliance Response Plan and the Permittee documents such response in accordance with subsection (e) below, the Permittee shall amend its Compliance Response Plan to include such response steps taken.
- (b) For each compliance monitoring condition of this permit, reasonable response steps shall be taken when indicated by the provisions of that compliance monitoring condition as follows:
  - (1) Reasonable response steps shall be taken as set forth in the Permittee's current Compliance Response Plan; or
  - (2) If none of the reasonable response steps listed in the Compliance Response Plan is applicable or responsive to the excursion, the Permittee shall devise and implement additional response steps as expeditiously as practical. Taking such additional response steps shall not be considered a deviation from this permit so long as the Permittee documents such response steps in accordance with this condition.
  - (3) If the Permittee determines that additional response steps would necessitate that the emissions unit or control device be shut down, the IDEM, OAQ shall be promptly notified of the expected date of the shut down, the status of the applicable compliance monitoring parameter with respect to normal, and the results of the actions taken up to the time of notification.
  - (4) Failure to take reasonable response steps shall constitute a violation of the permit.
- (c) The Permittee is not required to take any further response steps for any of the following reasons:
  - (1) A false reading occurs due to the malfunction of the monitoring equipment and prompt action was taken to correct the monitoring equipment.
  - (2) The Permittee has determined that the compliance monitoring parameters established in the permit conditions are technically inappropriate, has previously

submitted a request for an administrative amendment to the permit, and such request has not been denied.

- (3) An automatic measurement was taken when the process was not operating.
- (4) The process has already returned or is returning to operating within "normal" parameters and no response steps are required.
- (d) When implementing reasonable steps in response to a compliance monitoring condition, if the Permittee determines that an exceedance of an emission limitation has occurred, the Permittee shall report such deviations pursuant to Section B-Deviations from Permit Requirements and Conditions.
- (e) The Permittee shall record all instances when response steps are taken. In the event of an emergency, the provisions of 326 IAC 2-7-16 (Emergency Provisions) requiring prompt corrective action to mitigate emissions shall prevail.
- (f) Except as otherwise provided by a rule or provided specifically in Section D, all monitoring as required in Section D shall be performed when the emission unit is operating, except for time necessary to perform quality assurance and maintenance activities.

**C.13 Emergency Provisions [326 IAC 2-7-16]**

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- (a) An emergency, as defined in 326 IAC 2-7-1(12), is not an affirmative defense for an action brought for noncompliance with a federal or state health-based emission limitation, except as provided in 326 IAC 2-7-16.
- (b) An emergency, as defined in 326 IAC 2-7-1(12), constitutes an affirmative defense to an action brought for noncompliance with a health-based or technology-based emission limitation if the affirmative defense of an emergency is demonstrated through properly signed, contemporaneous operating logs or other relevant evidence that describe the following:
  - (1) An emergency occurred and the Permittee can, to the extent possible, identify the causes of the emergency;
  - (2) The permitted facility was at the time being properly operated;
  - (3) During the period of an emergency, the Permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards or other requirements in this permit;
  - (4) For each emergency lasting one (1) hour or more, the Permittee notified IDEM, OAQ, and Gary Division of Air Pollution Control within four (4) daytime business hours after the beginning of the emergency, or after the emergency was discovered or reasonably should have been discovered;

Telephone Number: 1-800-451-6027 (ask for Office of Air Quality,  
Compliance Section), or  
Telephone Number: 317-233-5674 (ask for Compliance Section)  
Facsimile Number: 317-233-5967

- (5) For each emergency lasting one (1) hour or more, the Permittee submitted the attached Emergency Occurrence Report Form or its equivalent, either by mail or

facsimile to:

Indiana Department of Environmental Management  
Compliance Branch, Office of Air Quality  
100 North Senate Avenue, P. O. Box 6015  
Indianapolis, Indiana 46206-6015

and

Gary Division of Air Pollution Control  
504 North Broadway, Suite 1012  
Gary, Indiana 46402

within two (2) working days of the time when emission limitations were exceeded due to the emergency.

The notice fulfills the requirement of 326 IAC 2-7-5(3)(C)(ii) and must contain the following:

- (A) A description of the emergency;
- (B) Any steps taken to mitigate the emissions; and
- (C) Corrective actions taken.

The notification which shall be submitted by the Permittee does not require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

- (6) The Permittee immediately took all reasonable steps to correct the emergency.
- (c) In any enforcement proceeding, the Permittee seeking to establish the occurrence of an emergency has the burden of proof.
- (d) This emergency provision supersedes 326 IAC 1-6 (Malfunctions). This permit condition is in addition to any emergency or upset provision contained in any applicable requirement.
- (e) IDEM, OAQ, and Gary Division of Air Pollution Control may require that the Preventive Maintenance Plans required under 326 IAC 2-7-4-(c)(10) be revised in response to an emergency.
- (f) Failure to notify IDEM, OAQ, and Gary Division of Air Pollution Control by telephone or facsimile of an emergency lasting more than one (1) hour in accordance with (b)(4) and (5) of this condition shall constitute a violation of 326 IAC 2-7 and any other applicable rules.
- (g) Operations may continue during an emergency only if the following conditions are met:
  - (1) If the emergency situation causes a deviation from a technology-based limit, the Permittee may continue to operate the affected emitting facilities during the emergency provided the Permittee immediately takes all reasonable steps to correct the emergency and minimize emissions.
  - (2) If an emergency situation causes a deviation from a health-based limit, the

Permittee may not continue to operate the affected emissions facilities unless:

- (A) The Permittee immediately takes all reasonable steps to correct the emergency situation and to minimize emissions; and
- (B) Continued operation of the facilities is necessary to prevent imminent injury to persons, severe damage to equipment, substantial loss of capital investment, or loss of product or raw materials of substantial economic value.

Any operation shall continue no longer than the minimum time required to prevent the situations identified in (g)(2)(B) of this condition.

**C.14 Actions Related to Noncompliance Demonstrated by a Stack Test [326 IAC 2-7-5]  
[326 IAC 2-7-6]**

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- (a) When the results of a stack test performed in conformance with Section C - Performance Testing, of this permit exceed the level specified in any condition of this permit, the Permittee shall take appropriate response actions. The Permittee shall submit a description of these response actions to IDEM, OAQ, within thirty (30) days of receipt of the test results. The Permittee shall take appropriate action to minimize excess emissions from the affected facility while the response actions are being implemented.
- (b) A retest to demonstrate compliance shall be performed within one hundred twenty (120) days of receipt of the original test results. Should the Permittee demonstrate to IDEM, OAQ that retesting in one-hundred and twenty (120) days is not practicable, IDEM, OAQ may extend the retesting deadline.
- (c) IDEM, OAQ reserves the authority to take any actions allowed under law in response to noncompliant stack tests.

The documents submitted pursuant to this condition do not require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

**Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]**

**C.15 General Record Keeping Requirements [326 IAC 2-7-5(3)][326 IAC 2-7-6]**

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- (a) Records of all required data, reports and support information shall be retained for a period of at least five (5) years from the date of monitoring sample, measurement, report, or application. These records shall be kept at the source location for a minimum of three (3) years. The records may be stored elsewhere for the remaining two (2) years as long as they are available upon request. If the Commissioner or Gary Division of Air Pollution Control makes a request for records to the Permittee, the Permittee shall furnish the records to the Commissioner or Gary Division of Air Pollution Control within a reasonable time.
- (b) Unless otherwise specified in this permit, all record keeping requirements not already legally required shall be implemented within ninety (90) days of permit issuance.

**C.16 General Reporting Requirements [326 IAC 2-7-5(3)(C)]**

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- (a) The reports required by conditions in Section D of this permit shall be submitted to:

Indiana Department of Environmental Management  
Compliance Data Section, Office of Air Quality  
100 North Senate Avenue, P. O. Box 6015

Indianapolis, Indiana 46206-6015

and

Gary Division of Air Pollution Control  
504 North Broadway, Suite 1012  
Gary, Indiana 46402

- (b) Unless otherwise specified in this permit, any notice, report, or other submission required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ, and Gary Division of Air Pollution Control on or before the date it is due.
- (c) Unless otherwise specified in this permit, all reports required in Section D of this permit shall be submitted within thirty (30) days of the end of the reporting period. All reports do require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).
- (d) The first report shall cover the period commencing on the date of issuance of this permit and ending on the last day of the reporting period. Reporting periods are based on calendar years.

## SECTION D.1

## FACILITY OPERATION CONDITIONS

### Facility Description [326 IAC 2-7-5(15)]

The upgrade of the existing pushing emissions control system which services Nos. 5 and 7 batteries as follows:

The replacement of the existing baghouse identified as CP3041, fan, dampers, motor and some of the associated duct work with a new baghouse identified as CP6050, new cross over duct work and modified machinery. This modification is expected to increase the exhaust gas flow rate from 134,800 acfm to 180,000 acfm which will improve the capture efficiency of fugitive pushing emissions at the moving capture hood.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

### Emission Limitations and Standards [326 IAC 2-7-5(1)]

#### D.1.1 (Nonattainment area particulate limitations: Lake County PM10 coke battery emission requirements) 326 IAC 6-1-10.2

Pursuant to 326 IAC 6-1-10.2 (3), the following emission limits shall apply during the pushing operation:

- (A) The opacity of emissions from the coke side of an oven to be pushed, before the first movement of the coke from the oven to the coke car begins, shall not exceed twenty percent (20%).
- (B) The opacity emissions during the pushing operation shall not exceed twenty percent (20%). The opacity shall be determined using 40 CFR 60, appendix A, method 9, except that the readings shall be taken at fifteen (15) second intervals. Six (6) consecutive readings shall be averaged to determine the opacity. The observer shall only use those backgrounds that are above the elevation of the battery surface. If this condition cannot be met for six (6) consecutive readings, then the opacity shall be determined using the lesser number of consecutive readings.
- (C) The Particulate emissions from the control device stack shall not exceed four hundredths (0.04) pounds per ton of coke pushed. Compliance with this emission limit shall be determined by 40 CFR 60, appendix A, Method 5

#### D.1.2 Coke oven batteries: emission limitations 326 IAC 11-3-2

Pursuant to 326 IAC 11-3-2 (g) (2), the control device shall be designed and operated in compliance with an operating permit to collect ninety (90%) of the pushing emissions.

#### D.1.3 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan, in accordance with Section C - Preventive Maintenance Plan, of this permit, is required for this facility and its control device.

### Compliance Determination Requirements

#### D.1.4 Particulate Matter (PM)

In order to comply with D.1.1, the baghouse for PM control shall be in operation and control emissions from the Nos. 5 and 7 Coke oven pushing at all times that the pushing is being performed.

**D.1.5 Continuous Compliance Plan [326 IAC 6-1-10.1]**

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(a) Pursuant to 326 IAC 6-1-10.1(p)(3)(E) Coke production shall comply with the following:

- (1) Describe operating and maintenance practices used to minimize emissions from charging doors, charge port lids, offtakes, standpipes, gooseneck caps and gas collector mains, pushing, underfire stacks, and quenching, including quench water dissolved solids control. The documentation shall include the following operating practices:
  - (A) Use of jumper pipe during charging.
  - (B) Procedure for worker's coordination, training, and communication.
  - (C) Luting material used.
  - (D) Periodic engineering evaluations to determine improvements needed.
  - (E) Aspiration practices during charging, including aspiration rate and adjustment.
- (2) Describe the routinely available inventory of spare parts and equipment, including luting compounds, doors, and mobile scrubber cars.

(b) Pursuant to 326 IAC 6-1-10.1(r)(1) a Continuous Compliance Plan for a facility controlled with a baghouse shall include the recording, inspection, and maintenance procedures, such as the following:

- (1) Operating parameters, such as the following:
  - (a) Pressure drop across the baghouse.
  - (b) Gas flow rate at baghouse inlet.
  - (c) Gas temperatures at inlet.

A CCP shall identify the monitors and instrumentation, and their location, accuracy, precision, and calibration frequency. A CCP shall also include a description of any visible emission evaluation program.

- (2) Baghouse cleaning system. A complete description of the cleaning system, including such information as intensity, duration, frequency, and method of activation.
- (3) Baghouse inspection and maintenance schedule. The inspection schedule logs or records shall be available for inspection by the department for up to one (1) year after the date of inspection. The inspection shall include the activities and frequency of the activities. A source may request an alternative schedule based on manufacturer's recommendations or alternatives documented by the company. The revised schedule must be approved by the department. Inspections shall include the following:

(a) Daily inspections shall include the following:

- (A) Pressure drop.
- (B) Fan amperage.
- (C) Cleaning cycle.
- (D) Compressed air on pulse jet baghouses for values outside of the operating ranges.
- (E) Dust discharge equipment for proper operation.
- (F) General check for abnormal audible and visual conditions.

(b) Weekly inspections of the following:

- (A) Moving parts on discharge system.
  - (B) Bypass and isolation damper operation.
  - (C) Bag tension.
  - (D) Compressed air lines, oilers, and filters.
  - (E) Manometer lines.
  - (F) Temperature indicating equipment.
  - (G) Bag cleaning sequence.
  - (H) Drive components on fans.
- (c) Monthly inspections of the following:
- (A) Bag seating condition.
  - (B) Moving parts on shaker baghouses.
  - (C) Fan corrosion and blade wear.
  - (D) Hoses and clamps.
  - (E) Bags for leaks and holes.
  - (F) Bag Housing for corrosion.
- (d) Quarterly inspections of the following:
- (A) Bags.
  - (B) Ducts for dust build-up.
  - (C) Damper valves for proper setting.
  - (D) Door gaskets.
  - (E) Baffle plate for wear.
- (e) Annual inspection of the following:
- (A) Welds and bolts.
  - (B) Hoppers for wear.
  - (C) Cleaning parts for wear.

**D.1.6 Testing Requirement [326 IAC 2.1.1-11]**

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The permittee shall perform PM testing on the new baghouse stack within 180 days after starting the operation of the new baghouse, new cross over duct work and modified machinery, utilizing method 5 (40 CFR 60, appendix A), or other methods as approved by the Commissioner. The test shall be performed to determine compliance with condition D.1.1(c).

**Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]**

**D.1.7 Visible Emissions Notations**

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- (a) Visible emission notations of the Nos. 5 and 7 coke oven pushing baghouse stack exhaust shall be performed once per shift during normal daylight operations when exhausting to the atmosphere. A trained employee shall record whether emissions are normal or abnormal.
- (b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.
- (c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.
- (d) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.



- (e) The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when an abnormal emission is observed. Failure to take response steps in accordance with Section C - Compliance Response Plan - Failure to Take Response Steps, shall be considered a violation of this permit.

#### D.1.8 Parametric Monitoring

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The Permittee shall record the total static pressure drop across the baghouse used in conjunction with Nos. 5 and 7 coke oven pushing, at least once per shift when the Nos. 5 and 7 coke oven pushing is in operation when venting to the atmosphere. When for any one reading, the pressure drop across the baghouse is outside the normal range of 2.0 and 12.0 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C- Compliance Response Plan - Failure to Take Response Steps. A pressure reading that is outside the above mentioned range is not a deviation from this permit. Failure to take response steps in accordance with Section C - Compliance Response Plan - Failure to Take Response Steps, shall be considered a violation of this permit.

The instrument used for determining the pressure shall comply with Section C - Pressure Gauge and Other Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ, and the City of Gary, Division of Air Pollution Control and shall be calibrated at least once every six (6) months.

#### D.1.9 Baghouse Inspections

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An inspection shall be performed each calendar quarter of all bags controlling Nos. 5 and 7 Coke oven batteries pushing when venting to the atmosphere. A baghouse inspection shall be performed within three months of redirecting vents to the atmosphere and every three months thereafter. Inspections are optional when venting to the indoors. All defective bags shall be replaced.

#### D.1.10 Broken or Failed Bag Detection

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In the event that bag failure has been observed:

- (a) For multi-compartment units, the affected compartments will be shut down immediately until the failed units have been repaired or replaced. Operations may continue only if there are no visible emissions or if the event qualifies as an emergency and the Permittee satisfies the emergency provisions of this permit (Section B- Emergency Provisions). Within eight (8) business hours of the determination of failure, response steps according to the timetable described in the Compliance Response Plan shall be initiated. For any failure with corresponding response steps and timetable not described in the Compliance Response Plan, response steps shall be devised within eight (8) business hours of discovery of the failure and shall include a timetable for completion. Failure to take response steps in accordance with Section C - Compliance Response Plan - Failure to Take Response Steps, shall be considered a violation of this permit.
- (b) For single compartment baghouses, failed units and the associated process will be shut down immediately until the failed units have been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

### **Record Keeping and Reporting Requirement [326 IAC 2-7-5(3)] [326 IAC 2-7-19]**

#### D.1.11 Record Keeping Requirements

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- (a) To document compliance with Condition D.1.6, the Permittee shall maintain records of visible emission notations of the Nos. 5 and 7 Coke oven pushing stack exhaust once per

shift.

- (b) To document compliance with Condition D.1.7, the Permittee shall maintain the following:
  - (1) Once per shift records of the differential pressure during normal operation when venting to the atmosphere.
- (c) To document compliance with Condition D.1.8, the Permittee shall maintain records of the results of the inspections required under Condition D.1.8.
- (d) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR QUALITY  
and  
City of Gary Division of Air Pollution Control**

**PART 70 SOURCE MODIFICATION  
CERTIFICATION**

Source Name: US Steel - Gary Works  
Source Address: One North Broadway, Gary , Indiana 46402  
Mailing Address: One North Broadway, Gary , Indiana 46402  
Source Modification No.: 089-15121-00121

**This certification shall be included when submitting monitoring, testing reports/results or other documents as required by this approval.**

Please check what document is being certified:

- 9 Test Result (specify) \_\_\_\_\_
- 9 Report (specify) \_\_\_\_\_
- 9 Notification (specify) \_\_\_\_\_
- 9 Affidavit (specify) \_\_\_\_\_
- 9 Other (specify) \_\_\_\_\_

I certify that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

Signature:

Printed Name:

Title/Position:

Date:

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR QUALITY  
COMPLIANCE BRANCH  
100 North Senate Avenue  
P.O. Box 6015  
Indianapolis, Indiana 46206-6015  
Phone: 317-233-5674  
Fax: 317-233-5967**

**and  
City of Gary Division of Air Pollution Control  
and  
IDEM Northwest Regional Office**

**PART 70 OPERATING PERMIT  
EMERGENCY OCCURRENCE REPORT**

Source Name:  
Source Address:  
Mailing Address:  
Part 70 Permit No.:

**This form consists of 2 pages**

**Page 1 of 2**

- |   |  |
|---|--|
| 9 | This is an emergency as defined in 326 IAC 2-7-1(12)   |
| C | The Permittee must notify the Office of Air Quality (OAQ), within four (4) business hours (1-800-451-6027 or 317-233-5674, ask for Compliance Section); and            |
| C | The Permittee must submit notice in writing or by facsimile within two (2) days (Facsimile Number: 317-233-5967), and follow the other requirements of 326 IAC 2-7-16. |

If any of the following are not applicable, mark N/A

Facility/Equipment/Operation:
Control Equipment:
Permit Condition or Operation Limitation in Permit:
Description of the Emergency:
Describe the cause of the Emergency:

If any of the following are not applicable, mark N/A

**Page 2 of 2**

Date/Time Emergency started:
Date/Time Emergency was corrected:
Was the facility being properly operated at the time of the emergency?    Y    N Describe:
Type of Pollutants Emitted: TSP, PM-10, SO <sub>2</sub> , VOC, NO <sub>x</sub> , CO, Pb, other:
Estimated amount of pollutant(s) emitted during emergency:
Describe the steps taken to mitigate the problem:
Describe the corrective actions/response steps taken:
Describe the measures taken to minimize emissions:
If applicable, describe the reasons why continued operation of the facilities are necessary to prevent imminent injury to persons, severe damage to equipment, substantial loss of capital investment, or loss of product or raw materials of substantial economic value:

Form Completed by: \_\_\_\_\_

Title / Position: \_\_\_\_\_

Date: \_\_\_\_\_

Phone: \_\_\_\_\_

A certification is not required for this report.

**Indiana Department of Environmental Management  
Office of Air Quality  
and  
City of Gary Division of Air Pollution Control  
and  
IDEM Northwest Regional Office**

**Technical Support Document (TSD) for a Part 70 Minor Source  
Modification.**

**Source Background and Description**

Source Name:	US Steel - Gary Works
Source Location:	One North Broadway, Gary , Indiana 46402
County:	Lake
SIC Code:	3312
Operation Permit No.:	T 089-7663-00121
Operation Permit Issuance Date:	Not yet issued
Minor Source Modification No.:	089-15121-00121
Permit Reviewer:	Ghassan Shalabi

The Office of Air Quality (OAQ) has reviewed a modification application from US Steel-Gary Works relating to the upgrade of the existing pushing emissions control system which services Nos. 5 and 7 coke oven batteries as follows:

The replacement of the existing baghouse identified as CP3041, fan, dampers, motor and some of the associated duct work with a new baghouse identified as CP6050, new cross over duct work and modified machinery. This modification is expected to increase the exhaust gas flow rate from 134,800 acfm to 180,000 acfm which will improve the capture efficiency of fugitive pushing emissions at the moving capture hood. There is no expected increase utilization in the No. 5 and 7 coke oven batteries. This proposed baghouse replacement does not physically modify these batteries.

**History**

On November 01, 2001, U.S. Steel - Gary Works submitted an application to the OAQ requesting to modify their existing pushing emissions control system which services Nos. 5 and 7 coke oven batteries. U.S. Steel - Gary Works submitted an application for a Part 70 permit on December 13, 1996.

**Enforcement Issue**

An enforcement action is pending against US Steel - Gary works for opacity violation at the Nos. 5 and 7 coke oven batteries.

### Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (°F)
CP6050	Baghouse (CP3041) which services pushing emissions control systems for Nos. 5 & 7 Coke oven batteries	90	8	180,000	0 to 400

### Recommendation

The staff recommends to the Commissioner that the Part 70 Minor Source Modification be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

An application for the purposes of this review was received on November 01, 2001.

### Emission Calculations

The calculations submitted by the applicant have been verified and found to be accurate and correct. These calculations are provided in Appendix A of this document (6 pages).

### Justification for Modification

The Part 70 Operating permit is being modified through a Part 70 Minor Source Modification. This modification is being performed pursuant to 326 IAC 2-7-10.5 (d), the modification has the potential to emit less than 25 tons per year of PM and PM-10.

### County Attainment Status

The source is located in Lake County.

Pollutant	Status
PM-10	moderate non-attainment
SO <sub>2</sub>	primary non-attainment
NO <sub>2</sub>	attainment or unclassifiable
Ozone	severe non-attainment
CO	attainment or unclassifiable
Lead	attainment or unclassifiable

- (a) Volatile organic compounds (VOC) are precursors for the formation of ozone. Therefore, VOC emissions are considered when evaluating the rule applicability relating to the ozone standards. Lake County has been designated as severe nonattainment for ozone. Therefore, VOC emissions were reviewed pursuant to the requirements for Emission Offset, 326 IAC 2-3.
- (b) The portion of Lake County in which the source is located has been classified as nonattainment for sulfur dioxide (SO<sub>2</sub>) and particulate matter with an aerodynamic diameter less than 10 microns (PM<sub>10</sub>). Therefore, these emissions were reviewed pursuant to the requirements for Emission Offset, 326 IAC 2-3.

### Source Status

Existing Source PSD or Emission Offset Definition (emissions after controls, based upon 8760

hours of operation per year at rated capacity and/or as otherwise limited):

Pollutant	Emissions (tons/year)
PM	2357
PM-10	2357
SO <sub>2</sub>	5677
VOC	1992
CO	88276
NOx	5884

- (a) This existing source is a major stationary source because an attainment regulated pollutant is emitted at a rate of 100 tons per year or more, and it is one of the 28 listed source categories.
- (b) These emissions are based upon the Annual Air Emission Inventory and Emission Statement Facility Report for the year 2000 located on the OAQ web page under Date Source for Lake County at <http://www.IN.gov/ide/air/data>.

#### Potential to Emit of Modification After Issuance

The table below summarizes the potential to emit, reflecting all limits, of the significant emission units after controls. The control equipment is considered federally enforceable only after issuance of this Part 70 source modification.

Process/facility	Potential to Emit (tons/year)	
	PM	PM-10
Future Potential*	15.76	9.99
Past Actual**	56.072	31.87
<b>Net Emissions from Project</b>	- 40.312	- 21.882
<b>PSD or Offset Threshold</b>	25	15

\*For No. 5 and 7 coke oven batteries with proposed controls.

\*\*average rates of the years 1999 and 2000 for No. 5 and 7 coke oven batteries with existing controls.

This modification to an existing major stationary source is not major because the emissions increase is less than the Emission Offset significant levels. Therefore, pursuant to 326 IAC 2-3, the Emission Offset requirements do not apply.

#### Federal Rule Applicability

- (a) There are no New Source Performance Standards (NSPS)(326 IAC 12 and 40 CFR Part 60) applicable to this proposed modification.
- (b) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs)(326 IAC 14 and 40 CFR Part 63) applicable to this proposed modification.



### **State Rule Applicability - Individual Facilities**

There are no additional state rules that apply to this source as a result of the proposed changes.

### **Compliance Requirements**

Permits issued under 326 IAC 2-7 are required to ensure that sources can demonstrate compliance with applicable state and federal rules on a more or less continuous basis. All state and federal rules contain compliance provisions, however, these provisions do not always fulfill the requirement for a more or less continuous demonstration. When this occurs IDEM, OAQ, in conjunction with the source, must develop specific conditions to satisfy 326 IAC 2-7-5. As a result, compliance requirements are divided into two sections: Compliance Determination Requirements and Compliance Monitoring Requirements.

Compliance Determination Requirements in Section D of the permit are those conditions that are found more or less directly within state and federal rules and the violation of which serves as grounds for enforcement action. If these conditions are not sufficient to demonstrate continuous compliance, they will be supplemented with Compliance Monitoring Requirements, also Section D of the permit. Unlike Compliance Determination Requirements, failure to meet Compliance Monitoring conditions would serve as a trigger for corrective actions and not grounds for enforcement action. However, a violation in relation to a compliance monitoring condition will arise through a source's failure to take the appropriate corrective actions within a specific time period.

### **Conclusion**

The construction of this proposed modification shall be subject to the conditions of the attached proposed Part 70 Minor Source Modification No. 089-15121-00121.

**Appendix (A)**  
**U.S. STEEL - GARY WORKS**  
**GARY COKE OPERATIONS - NOS. 5 & 7 BATTERIES**  
**PUSHING EMISSIONS CONTROL SYSTEM UPGRADE**  
**CALCULATIONS FOR ESTIMATING THE CHANGES IN EMISSION RATES OF**  
**PARTICULATE MATTER ATTENDENT TO THE PROJECT**

**Given:**

1. The existing pushing emission control system for Nos. 5 & 7 coke oven batteries will be upgraded by replacing the baghouse, exhaust fan, fan dampers, fan motor and some of the associated ductwork with new equipment and modified machinery.
2. The existing system is operated by opening fan dampers prior to a push. Dampers remain open during the push (movement of a pusher ram through a coke oven) and for a short period of time after all coke has settled in the car to complete "dedusting" (capture of pushing emissions remaining in the hood and ductwork). The total period of time that the dampers are open is approximately one minute.
3. The average coke production rates of the years 1999 and 2000 are as follows.

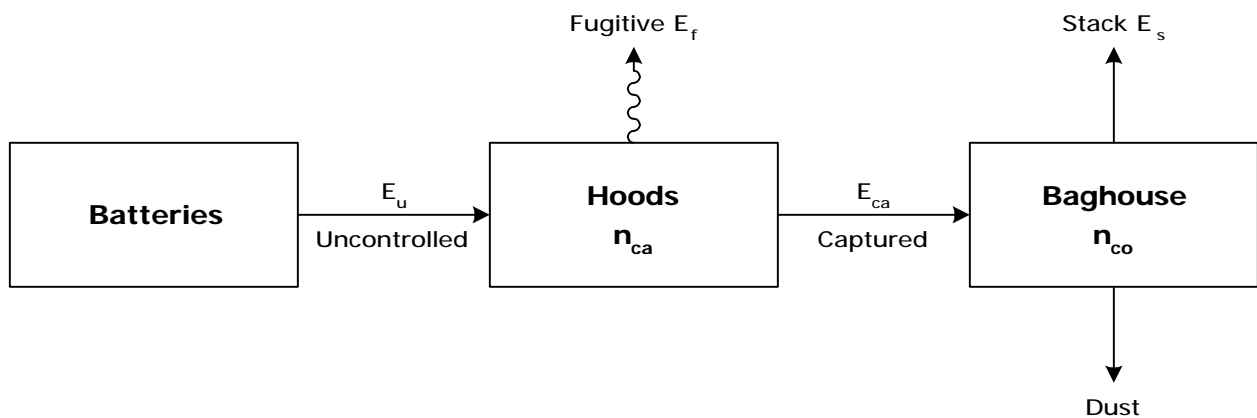
<b>Battery</b>	<b>Coke Production - tons/hr</b>	
	<b>Normal (Current Actual)</b>	<b>Maximum (Future Potential)</b>
5	33.035	37.5
7	33.30	37.5
Totals	66.335	75.0

4. One push at Nos. 5 and 7 batteries yields approximately 9 tons of coke which requires approximately 12 tons of coal charged.

### **Assumptions:**

1. Capture efficiency of the current hoods at 121,600 dscfm is approximately 90 percent, as specified in Indiana Rule 326 IAC 11-3-2(g)(2).
2. Capture efficiency of hoods with upgraded system at 180,000 acfm will be approximately 98 percent.
3. Use EPA AP-42 emission factor for uncontrolled pushing emissions of 1.15 lbs PM per ton of coal charged.
4. Assume that current stack emissions are at the limit specified in Indiana Rule 326 IAC 6-1-10.2(c)(3) of 0.04 lbs PM/ton coke.
5. Baghouse is being designed to comply with the current emission limit of 0.04 lbs PM/ton specified at 326 IAC 6-1-10.2(c)(3) as well as proposed MACT Standard of 0.017 lbs PM/ton coke specified at 40 CFR 63.7290(a)(2).

### **Calculate Baghouse Control Efficiency for Existing System**



$$E_u = \frac{1.15 \text{ lbs PM}}{\text{ton coal}} \times \frac{12 \text{ tons coal}}{9 \text{ tons coke}} = \frac{1.533 \text{ lbs PM}}{\text{ton coke}}$$

$$E_{ca} = n_{ca} E_u = 0.90 (1.533) = 1.38$$

$$n_{co} = 1 - \left( \frac{E_s}{E_{ca}} \right) = 1 - \left( \frac{0.04}{1.38} \right) = 0.9710 \Rightarrow 97.1\%$$

### **Calculate Past Actual Total Emissions**

$$E_t = E_f + E_s$$

$$E_f = E_u (1 - n_{ca}) = 1.533 (1 - 0.90) = 0.153$$

$$E_t = 0.153 + 0.04 = \underline{0.193 \text{ lbs PM/ton coke}}$$

Check:

$$E_t = E_u (1 - n_{ca} n_{co}) = 1.533 [1 - (0.90)(0.971)] = 0.193 \text{ Check}$$

$$\frac{0.193 \text{ lbs PM}}{\text{ton coke}} \times \frac{66.335 \text{ tons coke}}{\text{hr}} \times \frac{8,760 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton PM}}{2,000 \text{ lbs PM}} = \underline{\underline{56.075 \text{ tons PM / yr}}}$$

### **Calculate Future Potential Total Emissions**

$$E_f = E_u (1 - n_{ca}) = 1.533 (1 - 0.98) = 0.031 \text{ lbs PM / ton coke}$$

$$E_s = 0.017 \text{ lbs PM / ton coke (proposed MACT)}$$

$$E_t = E_f + E_s = 0.031 + 0.017 = \underline{\underline{0.048 \text{ lbs PM / ton coke}}}$$

### **Calculate Required Baghouse Control Efficiency**

$$E_{ca} = E_u n_{ca} = 1.533 \times 0.98 = 1.502$$

$$n_{co} = 1 - \left( \frac{E_s}{E_{ca}} \right) = 1 - \left( \frac{0.017}{1.502} \right) = 0.9887 \Rightarrow 98.9\%$$

$$\frac{0.048 \text{ lbs PM}}{\text{ton coke}} \times \frac{75 \text{ tons coke}}{\text{hr}} \times \frac{8,760 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton PM}}{2,000 \text{ lbs PM}} = E_s = \underline{\underline{15.77 \text{ tons PM / yr}}}$$

### **Calculate Change in PM Emissions**

	tons PM/yr
Future Potential	15.77
Past Actual	<u>- 56.075</u>
Change in Emissions	- 40.305 tons PM/yr

Upgrade will decrease PM emissions by an estimated 40.59 tons per year.

### **Estimate Change in PM<sub>10</sub> Emissions**

Per EPA AP-42 Table 12.2-4, mass fraction of uncontrolled emissions that are PM<sub>10</sub> is 0.433 (i.e., 43.3% of mass less than 10 microns).

Assume 100% of stack emissions at baghouse outlet is less than 10 microns.

### **Calculate Past Actual Emissions**

Stack emissions (100% PM<sub>10</sub>):

$$\frac{0.04 \text{ lbs PM}_{10}}{\text{ton coke}} \times \frac{66.335 \text{ tons coke}}{\text{hr}} \times \frac{8,760 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton PM}_{10}}{2,000 \text{ lbs PM}_{10}} = \underline{11.622 \text{ tons PM}_{10}/\text{yr}}$$

Fugitive Emissions (43.3% PM<sub>10</sub>):

$$\frac{0.153 \text{ lbs PM}}{\text{ton coke}} \times \frac{66.335 \text{ tons coke}}{\text{hr}} \times \frac{8,760 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton PM}}{2,000 \text{ lbs PM}} = 44.45 \text{ tons PM/yr}$$

$$\frac{44.45 \text{ tons PM}}{\text{yr}} \times \frac{0.433 \text{ tons PM}_{10}}{\text{ton PM}} = \underline{19.248 \text{ tons PM}_{10}/\text{yr}}$$

### **Calculate Future Potential Emissions**

Stack emissions (100% PM<sub>10</sub>):

$$\frac{0.017 \text{ lbs PM}_{10}}{\text{ton coke}} \times \frac{75.0 \text{ tons coke}}{\text{hr}} \times \frac{8,760 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton PM}_{10}}{2,000 \text{ lbs PM}_{10}} = \underline{5.58 \text{ tons PM}_{10}/\text{yr}}$$

Fugitive Emissions (43.3% PM<sub>10</sub>):

$$\frac{0.031 \text{ lbs PM}}{\text{ton coke}} \times \frac{75.0 \text{ tons coke}}{\text{hr}} \times \frac{8,760 \text{ hrs}}{\text{yr}} \times \frac{1 \text{ ton PM}}{2,000 \text{ lbs PM}} = 10.18 \text{ tons PM/yr}$$

$$\frac{10.18 \text{ tons PM}}{\text{yr}} \times \frac{0.433 \text{ tons PM}_{10}}{\text{ton PM}} = \underline{4.41 \text{ tons PM}_{10}/\text{yr}}$$

	Estimated Annual Emissions - tons/yr			
	Past Actual		Future Potential	
	PM	PM <sub>10</sub>	PM	PM <sub>10</sub>
Stack Emissions	11.622	11.622	5.58	5.58
Fugitive Emissions	<u>44.45</u>	<u>19.248</u>	<u>10.18</u>	<u>4.41</u>
Total Emissions	56.072	31.87	15.76	9.99

	“Regulatory” Increase in Annual Emissions - tons/yr	
	PM	PM <sub>10</sub>
Future Potential	15.76	9.99
Past Actual	<u>- 56.072</u>	<u>- 30.87</u>
“Regulatory” Increase	- 40.312	- 20.882